

Amendments to the Drawings:

A replacement sheet containing Figs. 1 and 2 is enclosed, in which the French legend previously shown in Fig. 2 is removed. In view of the above, applicants request that the objection to Fig. 2 be withdrawn.

Attachment: Replacement sheet [Figs. 1 and 2]

REMARKS

Status of Claims

Claims 1-4, 6-7, and 9-11 are pending in the application, with claim 1 being the only independent claim. Claims 5 and 8 have cancelled without prejudice and disclaimer. Independent claim 1 has been amended to recite claim features concerning a minimum quantity of butyl rubber in the covering mix as recited in original claim 5. Claims 1-3 have been amended to remove informalities indicated in the Office Action without narrowing the scope of any claims or any elements contained therein. Additional amendments have been made to the claims to conform to U.S. patent practice without narrowing any of the claims or any claim element contained therein. New claims 10 and 11 have been added, which are supported by original claims 1 and 2, respectively.

Reconsideration of the subject application in view of the above amendments and the following remarks is respectfully requested.

Overview of the Office Action

The drawings have been objected to for containing French language legend.

Claims 1-9 have been rejected under 35 U.S.C. §112, second paragraph, due to informalities.

Claims 1-6 and 8-9 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Matsumoto (US 6,035,911) in view of Vasseur (US 7,335,692 or WO 02/088238) and JP '712 (JP 09-099712).

Claim 7 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Matsumoto in view of Vasseur and JP '712, and further in view of JP '701 (JP2000-153701).

Claims 1-9 have been rejected under 35 U.S.C. §103(a) as being unpatentable over JP '701 in view of Vasseur.

Amendments Addressing Informalities

Fig. 2 has been amended to remove the French legend. In view of such amendment, the drawing objection is believed to have been overcome.

Claims 1-3 have been amended to address the informalities listed on pages 2 and 3 of the Office Action. In view of the above claim amendments, the 35 U.S.C. §112 rejection of claims 1-7 and 9 are believed to have been overcome.

Summary of the Subject Matter Disclosed in the Specification

The following descriptive details are based on the specification. They are provided only for the convenience of the Examiner as part of the discussion presented herein, and are not intended to argue limitations which are unclaimed.

Tire treads need to have a good wear life performance on dry roadways while substantially improving the grip performance on wet roadways. The techniques meeting these two criteria however may counteract with one another because tread rubber compositions with good wear performance on dry roadways have poor grip performance on wet roadways. Consequently, the vehicle is more difficult to drive on wet roadways since it is more difficult to follow a good trajectory. Conversely a rubber composition having a good grip performance on wet roadways has a poor wear life on dry roadways.

The present application provides a tire tread that is formed by a base rubber mix (MB) having good wear properties on dry road and by a covering rubber mix (MR) on the sidewalls (13 - 16) of the tread pattern elements (1). The covering rubber mix (MR) comprises the following composition to improve grip performance of the tread:

- a given proportion of butyl rubber (e.g., more than 15 phr); and
- a plasticizer of unsaturated C₁₂-C₂₂ fatty acid ester type.

The above covering rubber composition has an enhanced grip performance on wet roadways. The provision of such composition and its location only on the sidewalls (13 – 16) of the tread pattern elements (1) surprisingly improve the wet grip performance for the entire tread, comparing to a tread band having only a rubber mix good in wear. For example, the covering mix in the subject application is capable of preventing the tread from skidding on wet roadways.

See, e.g., Fig. 2 and paragraphs [0004]-[0005] and [0012]-[0013] of the published version of the specification in US 20007/0062623.

Patentability of the Claimed Invention

Independent claim 1 recites “said covering mix comprising more than 30 phr of a butyl rubber and a plasticiser of an unsaturated C₁₂-C₂₂ fatty acid ester type.” Based on the following detailed reasons, the above recited features of independent claim 1 are not obvious over the cited references, taken either individually or in combination as suggested in the Office Action.

A. Independent claim 1 is not obvious over
Matsumoto in view of Vasseur and JP ‘712

The Office Action acknowledges that Matsumoto does not teach using “an unsaturated C₁₂-C₂₂ fatty acid ester type” in the surface layer portion 7c (see page 4 of Office Action). The Office Action however takes the position that it is obvious to apply Vasseur’s teachings of “glycerol fatty acid trimester” to Matsumoto’s rubber composition. Id. Applicants disagree based on the following detailed reasons.

(i)

There is no reasonable expectation of success that the proposed combination of Vasseur and Matsumoto will arrive at the claimed invention.

Section 2143.02 of MPEP requires reasonable expectation of success when combining prior art references:

A rationale to support a conclusion that a claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded nothing more than predictable results to one of ordinary skill in the art. *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1395 (2007); *Sakraida v. AG Pro, Inc.*, 425 U.S. 273, 282, 189 USPQ 449, 453 (1976); *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57, 62-63, 163 USPQ 673, 675 (1969); *Great Atlantic & P. Tea Co. v. Supermarket Equipment Corp.*, 340 U.S. 147, 152, 87 USPQ 303, 306 (1950).

In this case, Matsumoto teaches a tread for allegedly improving the drainage properties when rolling on wet roadways and increase the speed limit of causing the hydroplaning phenomenon. In Matsumoto, the tread band has a surface layer portion 7c covering a base portion 7b (see, Fig. 1 of Matsumoto). The surface layer portion 7c in Matsumoto comprises one or more rubbers including butyl rubbers and contains a reinforcing agent and a fluorine-based additive having a perfluoroalkyl group containing copolymer (see, col. 5, ll. 5-6).

Vasseur teaches a tread composition to improve the grip performance of the tread on dry and wet roadways. The tread composition rubber in Vasseur is formed by one or more diene elastomers and a plasticizer comprising a glycerol fatty acid triester. Vasseur expressly teaches that the diene elastomers are “highly unsaturated” elastomers, which have a high content of units of diene origin of greater than 50% (see col. 4, ll. 4-8 of Vasseur). As one skilled in the art will appreciate, such diene elastomers in Vasseur are not butyl rubbers, which are essentially saturated diene elastomers (see, paras. [0015]-[0016] of the published application). Accordingly, to improve the grip performance of the tread on dry and wet roadways, Vasseur teaches using a “glycerol fatty acid trimester” to interact with diene elastomers that are not butyl rubbers.

Vasseur however does not teach that the “glycerol fatty acid trimester” component in the tread composition rubber can be combined with “saturated” diene elastomers, such as the butyl rubbers recited in independent claim 1. In fact, Vasseur teaches just the opposite and uses

“highly unsaturated” elastomers in the rubber composition. In view the above teachings of Vasseur, one skilled in the art is, if not taught away from combining Matsumoto and Vasseur as suggested in the Office Action, unable to ascertain if Vasseur’s “glycerol fatty acid trimester” can be combined with “saturated” diene elastomers, much less butyl rubbers recited in independent claim 1. Accordingly, the combination of Matsumoto and Vasseur fail to teach or suggest predictable results to one skilled in the art and there is no reasonable expectation of success that the proposed combination of Vasseur and Matsumoto will arrive at the claimed invention (MPEP §2143.02).

In addition, there is no teaching that Vasseur’s rubber composition or any component thereof can be applied to the covering portion, rather than the base portion, of a tire tread. More specifically, Vasseur does not teach that the “glycerol fatty acid trimester” in the rubber composition can be incorporated in the covering mix to arrive at independent claim 1. Instead, Vasseur generally teaches that its rubber composition is used for forming tire treads. As Vasseur does not differentiate base and covering portions of a tire tread, Vasseur’s rubber composition can be employed to form the base portion of a tire tread. In such a case, the combined Vasseur and Matsumoto will not arrive at the claimed invention. Therefore, it is not obvious to combine Vasseur with Matsumoto as proposed in the Office Action (MPEP §2143.02).

JP ‘712 is cited in the Office Action against other claim features and does not remedy the above discussed deficiencies of Matsumoto and Vasseur.

Therefore, independent claim 1 patentably distinguishes over the cited references for at least the above reasons.

(ii)

There is no motivation to modify Matsumoto in order to arrive at the claimed invention. Matsumoto teaches that:

In order to shift the speed of causing the hydroplaning phenomenon during the running on wet road surface toward a higher speed side, it is enough to enhance an ability of draining water wedgedly dug into the ground contact zone of the tread rubber during the high-speed rotating of the tire toward the outside of the ground contact zone in a higher efficiency as fast as possible. It need scarcely be said that the groove highly contributes to the drainage efficiency of water. As previously mentioned, therefore, the conventional technique has adopted the discovery on the groove shape and groove arrangement for rendering the drainage efficiency into a maximum or a value near thereto. (See, col. 5, ll. 11-23 of Matsumoto.)

In view of the above teachings of Matsumoto, one skilled in the art will consider it essential to improve the repelling property of the tread rubber so as to reduce the friction resistance of the groove surface to the flowing water. Accordingly, there is no motivation for one skilled in the art to further modify Matsumoto to increase the grip on water present on wet roadways. Among other reasons, such additional modification concerning the grip performance on wet road may adversely affect the wear life performance of the tread on dry road due to the conflicting nature concerning wet road and dry road performances, as applicants submitted above. Consequently, one skilled in the art will not be motivated to further modify Matsumoto to arrive at the covering rubber mix recited in independent claim 1 because the results of such a modification would not yield predictable results to one skilled in the art. Therefore, independent claim 1 patentably distinguishes over the cited references for the above additional reasons.

In view of the above, the rejection of independent claim 1 based on Matsumoto, in view of Vasseur and JP '712 should be withdrawn.

B. Independent claim 1 is not obvious over
JP '701 in view of Vasseur

JP '701 teaches a tread having a covering layer 3 provided at least at the bottom of the grooves 2. The covering layer 3 is made of butyl rubbers. JP '701 is conceived to reduce the flow of oxygen and moisture through the groove bottom toward the rubber mix covering the steel

cords and then provoke a break in the "glue line of a steel cord layer." JP '701 focuses on the tires used in specific geographic area of high-humidity/temperature.

The Office Action acknowledges that JP '701 does not teach "using unsaturated C_{12} - C_{22} fatty acid ester type in the surface layer 7c" (see page 8 of Office Action). The Office Action however takes the position that it is obvious to apply Vasseur's teaching of a "glycerol fatty acid trimer" to the covering layer 3 of JP '701. *Id.* Applicants disagree based on the following detailed reasons.

First, there is no reasonable expectation of success, i.e., no predictable results, that the proposed combination of Vasseur and JP '701 will arrive at the claimed invention, for similar reasons stated above in Section A(i).

Secondly, there is no motivation to modify JP '701 to incorporate Vasseur's teachings concerning a "glycerol fatty acid trimer" in order to arrive at the claimed invention.

The covering layer 3 in JP '701 is provided to reduce the flow of oxygen and moisture through the groove bottom toward the rubber mix covering the steel cords. There is no teaching or suggesting that such cover layer 3 in JP '701 be modified to incorporate Vasseur to improve the resistance to oxygen or moisture diffusion. Vasseur states that:

As evidenced by the results of soluble fraction SF (%), this improvement in endurance can be explained by the fact that the plasticizer of each composition according to the invention has a lesser tendency to migrate into the mixture of the belt. (See, col. 21, ln. 10 of Vasseur.)

The above cited portions of Vasseur merely states that its plasticizer does not migrate into the belt rubber mix. However, there is no teaching that the plasticizer in Vasseur reduces migration of oxygen and moisture into the rubber mix. Consequently, one skilled in the art will not be motivated to apply Vasseur's plasticizer to the covering layer 3 of JP '701 to enhance its function of reducing the flow of oxygen and moisture.

Moreover, there is no teaching or suggestion that JP '701 be modified to improve the grip performance of a tire or otherwise incorporate the covering mix recited in independent claim 1. Therefore, it is not obvious to one skilled in the art to incorporate Vasseur's unsaturated C₁₂-C₂₂ fatty acid ester type in the cover layer 3 of JP '701.

Therefore, independent claim 1 is not obvious over JP '712 in view of Vasseur. The rejection of independent claim 1 based on these references should be withdrawn.

Dependent Claims 2-4, 6-7, and 9-11

Claims 2-4, 6-7, and 9-11 depend, directly or indirectly, from allowable independent claim 1 and are therefore allowable therewith. In addition, claims 2-4, 6-7, and 9-11 each include features which serve to even more clearly distinguish the claimed invention over the applied prior art.

Conclusion

Based on all of the above, the present application is now in proper condition for allowance. Prompt and favorable action to this effect and early passing of this application to issue are respectfully solicited. Should the Examiner have any comments, questions, suggestions or objections, the Examiner is respectfully requested to telephone the undersigned in order to facilitate reaching a resolution of any outstanding issues.

Respectfully submitted,
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